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NOTES ON THE OCCURRENCE OF PLATYSAMIA COLUMBIA SM. IN THE OTTAWA REGION (LEPID., SATURNIIDAE) *

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Platysamia columbia Sm. has not been recorded from southern Ontario nor from Quebec since the beginning of this century. At that time it was recorded as extending from Maine to western Ontario and south to southern Michigan. In 1937, Sweadner (Ann. Carn. Mus., XXV, 167-232) limited the distribution of *columbia* to include the region east of Winnipeg, Man., the northern shore of Lake Superior, the area around North Bay, Ont., and a small colony in Michigan and a similar one in Maine. He considered this restricted distribution in Canada as due either to the destruction of the larch trees, the food plant of *columbia*, by the larch sawfly, or to disease. Others have suggested that the scarcity of *columbia* is due to the mating of the *columbia* females with *cecropia* males, a condition which apparently does occur in nature and which results in the sterility of the F_1 females.

Recently Mr. Jos. I. Beaulne of the Quebec Department of Agriculture reported the capture of two adult *columbia* near Charlesbourg, Que., and one cocoon found near Quebec City. Two specimens of *columbia* in the Canadian National Collection collected by R. McKenzie near Almonte, Ont., in 1884 showed that this moth at one time occurred in the Ottawa district and formed the incentive for an intensive search during the past two years of an area of approximately sixty square miles, extending from Ottawa to Almonte. The extensive larch stands of this area have never been completely destroyed by the larch sawfly, and it is doubtful if the injury was sufficient to threaten *columbia* with extinction. It is my opinion that the absence of *columbia* records from southern Ontario during the last thirty years is partly due to the scarcity of the moth and to the lack of intensive searching.

The survey for cocoons was started in the late fall of 1938 as soon as the larch trees had shed their leaves and before the advent of snow made the area inaccessible. This period lasted only a short time and the search resulted in finding a few either old or parasitized cocoons. No living pupae were obtained, but their presence in this area was established. During the following summer, two small *columbia* larvae were beaten from larch trees and reared to the pupal stage, in which stage they remain at the time of writing. Beating for these larvae is not recommended because of the firm grasp the caterpillars have upon the twig and the consequent chances of injury.

The search for cocoons was continued in the fall of 1939, and the time between the falling of the larch leaves and the advent of snow was considerably lengthened, lasting throughout most of November. This period was associated with clear bright days and made ideal searching conditions which resulted in obtaining seventeen living pupae and several old cocoons. It is interesting to note that almost all of the cocoons obtained were found on isolated trees with relatively little or no undergrowth except grasses, or along the outside edges of a larch stand. This is probably due to the ease of maneuverability in these places during oviposition. Two living pupae were found on a tree that had been well beaten during the search for larvae in the summer, showing the inefficiency of that method.

*Contribution from the Division of Entomology (Systematic Entomology), Department of Agriculture, Ottawa.

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In general the cocoons were distributed over the whole area investigated, usually in small closely associated groups which were linked with one another by sporadic distribution. On the tree, they varied in height from five to thirty-five feet, and more often they were on the side of greatest light intensity. On large trees they may be found on the upper or lower sides of main branches not far from the trunk or along small branches farther out, or near the extreme tip of the main trunk where its diameter is no larger than one of the branches lower down, either in a horizontal or vertical or intermediate plane—in short, anywhere, except perhaps along the main trunk lower down or the very small twigs farther out. On small trees, however, the main trunk forms the chief locus of attachment, possibly because the branches and twigs are too small for security. One cocoon which appeared to be a hybrid ♀ *columbia* × ♂ *cecropia* was found high up on a large tree and well out from the main trunk attached to a very small twig. In such a location one does not find *columbia* pupae, yet the cocoon was not quite typically *cecropia* in character, being deeper brown in color and more compact. However this might have been due to the change of food plant as a typical *cecropia* emerged. An old cocoon partially destroyed by woodpeckers, quite typically that of *cecropia*, was also found on a small larch tree.

The results of this survey show that *columbia* still exists in the Ottawa region, and is probably more commonly distributed than is generally supposed. It is quite possible that the difficulty in finding the cocoons, for it is no easy task, is in part responsible for the supposed extinction of *columbia*.

A NEW RACE OF LYCAENA DORCAS FROM NORTHEASTERN NEW BRUNSWICK*

BY J. McDUNNOUGH,
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In the same salt meadows north of Bathurst, N. B., where Mr. Brown and I captured the recently described race of *Coenonympha inornata* (1939, Can. Ent., LXXI, 266) we took a series of specimens of *L. dorcas* Kby. which on examination, after spreading, appears to constitute an undescribed and rather strikingly different race. The butterflies were by no means common; the first specimens were taken on August 6, evidently freshly emerged, and by dint of careful searching during the next four or five days we were able to capture a series of about 50 specimens. The species is rather strictly confined to areas where the larval food-plant, *Potentilla*, grows, and we were able not only to secure a few eggs by examining leaves on growing plants, but also to obtain a considerably larger number by confining females in glass jars containing *Potentilla* plants; these eggs, which hibernate, are at present in cold storage and we hope to breed the larva through to the adult stage this coming season. I take much pleasure in naming this new race after that well-known Diurnal specialist, Mr. C. F. dos Passos of Mendham, N. J., in memory of several most pleasant visits he has made to Ottawa.

Lycaena dorcas v. **dosPassosi** var. nov.

Differs from typical *dorcas* as follows:

(a) The size is *much larger*, the majority of the specimens measuring 30 mm. across the widest part of the forewing; the smallest male measures 25 mm. The size, therefore, is that of the western *florus* Edw.

(b) The black spots on upper side of both wings are *very large and heavy*, the increase in size being particularly noticeable in the postmedian row. In the female (especially on the forewing) this row is usually bordered outwardly

*Contribution from the Division of Entomology (Systematic Entomology), Department of Agriculture, Ottawa.

by a series of quadrate, pale orange spots, although on occasion the brown suffusion prevalent over the balance of the wing may obscure them almost entirely.

(c) The black spotting on underside of primaries is as *heavy as on upper side* and the ground color is more of a *dull ochreous* than a bright orange.

(d) The color of the underside of secondaries is duller, frequently considerably tinged with pale ochreous, the orange submarginal lunules less evident and the *black spotting markedly increased*, the normally obscure post-discal row of spots being enlarged into a *prominent, irregular row of black lunules*, forming almost a continuous band; the basal black spots are also more developed.

Holotype—♂, Bathurst, N. B., Aug. 6, 1939, (J. McDunnough); No. 5092 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, Aug. 8.

Paratypes—18 ♂, 14 ♀, same data, Aug. 6-12, (W. J. Brown and J. McDunnough).

It might be well to mention in this connection that Kirby's description of *dorcas* was based on a female collected by the Second Expedition of Sir John Franklin; the locality is merely given as Lat. 54° which, taking into consideration the route followed by the expedition, might mean roughly anywhere from the upper end of Lake Winnipeg to what is now called Prince Albert National Park in Saskatchewan; it is likely, however, that the material was captured in the vicinity of Cumberland House. While I have only seen an odd specimen or so from this region, those I have examined do not appear to differ materially from specimens from further east in Northern Ontario and the vicinity of James Bay nor from series before me from the Alberta foothills (Nordegg) and Great Bear Lake in the North West Territories. Probably the typical race extends over the whole large area between Hudson Bay and the Rocky Mts., inhabiting the numerous bogs and muskegs of this region.

MODIFICATION OF A STREAM BOTTOM AND ITS EFFECT ON THE INSECT FAUNA*

BY GEORGE WENE AND E. L. WICKLIFF
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Studies of stream bottoms as a factor in the abundance of aquatic insects is usually accomplished by random sampling of different kinds of pools and riffles. Various types of apparatus and methods are used. Ludwig (1922) used the hand-dip method in his studies. The Needham trap (1928) has also been used extensively in the study of rocky riffles. Gersbacher (1937) used the Peterson trap (1911) and the Ekman dredge (1911) for sand and mud bottom pools. At present the United States Bureau of Fisheries one foot trap, described by Surber (1937), is very popular in studying riffles.

In 1937, the junior author and L. S. Roach of the Ohio Division of Conservation and Natural Research, devised the "Basket Method" for studying the effects of contrasting types of stream bottoms on the insect fauna. Wire baskets were constructed of quarter inch square wire mesh, with one square foot inside area and a depth of four inches. The baskets were then filled with various types of bottom materials which were previously cleaned so the filled baskets were also classed as denuded areas.

PROCEDURE

The wire baskets were filled with two types of stream bottoms classified as medium and small rubble. The medium rubble consisted of stones 6½ by 4½ by 3½ inches, while small rubble was 4½ by 3½ by 3½ inches in size.

*Contribution from the Ohio Division of Conservation and Natural Resources in cooperation with the W. P. A. Stream Survey Project No. 25-6244.

These baskets were placed in the creek bottom in such a manner that the surface of the baskets were level with the stream bottom. The baskets were allowed to remain approximately a month, then each was carefully lifted with a 36 mesh dip net beneath. After cleaning the stones with a brush, the insects were picked out, and placed in a labeled bottle containing a 4% solution of formalin. Present data seems to indicate, possibly, that the insect populations in the baskets reached their maximum in a month's time.

Check or comparison samples in a pool were taken whenever possible with a Peterson trap. If it was impossible to use a Peterson dredge, then a 20 inch trap, which is a modification of the Needham trap, was used. The modified 20 inch trap was used on riffle samples. Check samples were taken near the baskets. All computations were made on the basis of one square yard of stream bottom.

LOCATION OF STATIONS

The work was carried out in Blacklick Creek, Franklin County, Ohio. Blacklick Creek is 30 miles in length with an average drop of 16.1 feet per mile. The first place in which this work was carried on was in a riffle about midway the length of the Creek. For convenience it was called Station 1. The riffle was about 100 feet long, 15 feet wide and 12 inches deep. The bottom was composed primarily of gravel and sand. Due to a transfer of headquarters, this station was abandoned after a month's time.

The work was then continued about four miles down stream. The place was designated as Station 2. The riffle was similar to that of Station 1 except for the bottom. The creek bed at this point was composed of a mixture of different sizes of rubble, with the majority of the stones being larger than medium size rubble. Because of this, the riffle was classified as a large rubble riffle.

At the foot of a nearby riffle, there was a pool about 100 feet long and 60 feet wide. The depth varied from 8 to 25 inches. When the creek was in the low water stage there was no apparent current. The bottom was composed of sand.*

DISCUSSION OF RESULTS

The riffle at Station 1 had a sand and gravel bottom. Baskets filled with medium rubble were placed in this riffle. Table 1 compares the average population of the baskets and the check samples. The baskets had approximately four times as many insects as the check samples. The following orders of insects, Coleoptera, Ephemerida, and Diptera showed a very pronounced increase in numbers. If the baskets are considered denuded areas, this would seem to indicate that aquatic insects moving over the bottom tend to populate an area which is new or more suitable.

At Station 2, medium rubble baskets were placed in a riffle composed of a mixture of small to large rubble The majority of the stones were around 9 by 6 by 6 inches in size.

This riffle was classified as large rubble. Tables 2 and 3 compare the basket samples with the check samples for the months of February and April. In February there were approximately 26% more insects in the large rubble check samples than in the medium rubble baskets. In April the check samples showed an increase in the number of Coleoptera, Diptera, and Ephemerida.

At Station 2, two series of baskets were placed in a sandy bottom pool. One series of baskets contained small rubble while the other contained medium. Tables 4, 5, and 6 compare the two types of basket populations with the check samples. In February the small rubble baskets had approximately three times as many insects as the check samples while the large rubble had five times as many. March and April showed similar trends although there was a drop in the total population. When considering the three months, the large rubble

*More detailed physical data will be given in the following paper.

shows a slight increase in population over the small rubble.

Monthly check samples had been taken in this pool for one year before this experiment was started. Those samples consisted almost entirely of Chironomidae, but the basket samples yielded a large number of Trichoptera, Plecoptera, Ephemerida, Diptera, and Coleoptera. Since these baskets were first placed in February it can be assumed that the insects occupied them because the baskets were more favorable as a temporary habitat or a new area.

CONCLUSIONS

The following trends were noticed:

1. Medium rubble in a riffle is more productive in numbers of insects than gravel.

2. In a riffle large rubble shows an increase in population when compared with medium rubble.

3. The productivity of sandy bottom pools can be greatly increased by the addition of rubble.

4. When rubble is placed in a sandy bottom pool it greatly increases the population of Ephemerida, Diptera and Coleoptera, which seems to indicate that aquatic insects move.

In view of the above points, further studies should be carried out with the basket method. The authors feel that a study of this type should be carried out in order to determine a definite classification of stream bottoms based upon their bottom associations and animal populations.

TABLE 1

Comparison of Average Insect Populations in Medium Rubble Baskets and the Check Samples of the Gravel Bottom Riffle of January, 1938

Order of Insects	Populations Per Square Yard	
	Medium rubble baskets	Check samples in gravel riffle
Trichoptera	1921	149
Plecoptera	52	90
Ephemerida	509	100
Diptera	1230	499
Coleoptera	227	110
Neuroptera	0	3
Odonata	43	0
Total	3982	951

TABLE 2

Comparison of Average Insect Populations in Medium Rubble Baskets with Check Samples Composed of a Mixture of Small, Medium and Large Rubble at Station 2, February, 1938

Order of Insects	Populations Per Square Yard	
	Medium rubble	Check samples of mixed rubble
Trichoptera	445	618
Plecoptera	83	2
Ephemerida	72	105
Diptera	403	493
Coleoptera	32	91
Neuroptera	5	7
Odonata	7	3
Total	1047	1319

TABLE 3

Comparison of Average Insect Populations in Medium Rubble Baskets with Check Samples Composed of a Mixture of Small, Medium and Large Rubble at Station 2, April, 1938

Order of Insects	Populations Per Square Yard	
	Medium rubble	Check samples of mixed rubble
Trichoptera	234	97
Plecoptera	9	45
Ephemerida	54	257
Diptera	373	441
Coleoptera	36	138
Neuroptera	0	2
Lepidoptera	0	4
Odonata	0	1
Total	706	985

TABLE 4

Comparison of Average Insect Populations of Small Rubble Baskets and Median Rubble Baskets with Check Samples in a Sandy Pool at Station 2, Febraury, 1938

Order of Insects	Population Per Square Yard		
	Small rubble baskets	Check samples in Sandy pool	Medium rubble baskets
Trichoptera	180	0	137
Plecoptera	85	0	34
Ephemerida	137	0	130
Diptera	767	446	1593
Coleoptera	20	5	10
Neuroptera	0	0	4
Odonata	13	0	7
Total	1202	451	1915

TABLE 5

Comparison of Average Insect Populations of Small Rubble Baskets and Medium Rubble Baskets with Check Samples in a Sandy Pool at Station 2, March, 1938

Order of Insects	Population Per Square Yard		
	Small rubble baskets	Check samples in Sandy pool	Medium rubble baskets
Trichoptera	153	66	221
Plecoptera	14	2	23
Ephemerida	6	4	253
Diptera	1156	202	261
Coleoptera	27	0	18
Lepidoptera	5	0	0
Odonata	5	0	0
Total	1356	274	769

TABLE 6

Comparison of Average Insect Populations of Small Rubble Baskets and Medium Rubble Baskets with Check Samples in a Sandy Pool at Station 2, April, 1938

Order of Insects	Population Per Square Yard		
	Small rubble baskets	Check samples in Sandy pool	Medium rubble baskets
Trichoptera	51	11	45
Plecoptera	27	0	21
Ephemerida	30	11	232
Diptera	96	97	149
Coleoptera	33	2	18
Neuroptera	0	0	0
Odonata	3	2	0
Total	240	126	465

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A SYNOPSIS OF THE NORTH AMERICAN SPECIES OF SYNDIPNUS (HYMEN., ICHNEUMONIDAE) *

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As noted below the two North American species described in *Syndipnus* by previous workers appear to belong in other genera. In Europe the genus is represented by nearly a score of species and has been reviewed in recent years by two writers (1, 2). North American collections contain very few representatives of the genus; after combining the material in the National Collection with that from the United States National Museum, the latter kindly loaned to me by Mr. R. A. Cushman, only thirty-seven specimens are available for study. In this small collection I have found several species represented. In the following synopsis seven of these species are discussed by name, and notes are included on a few other specimens, mostly males, which seem to represent additional species but which it appears best to leave unnamed pending the securing of more adequate material. Among the named species several exhibit some variation in structure and considerable variability in color. With such a small amount of material for study it is difficult to evaluate such variations but they have been carefully noted since it is felt such information may be helpful to future workers.

The essential character for the recognition of the species here included in *Syndipnus* is the fused condition of the second and third abdominal tergites. I have not been able to ascertain whether this character applies to the genotype, *S. macrocerus* (Thoms.) but it is present in *S. lateralis* (Grav.) of which I have seen European specimens, and in *S. pannicularius* (Holmg.) as recognized below. It may be noted that in the opinion of Thomson (3) *macrocerus* and *pannicularius* may be synonymous, while Roman (1) regards the latter as a possible synonym of *lateralis*, and Schmiedeknecht (2) while recognizing all three species as distinct, places them together in his synopsis.

The following characters are of value in recognizing the group of species dealt with in this paper. Vertex with a more or less distinct V-shaped longitudinal depression extending from ocellar area to occiput; clypeus transverse, distinctly separated from face, free margin truncate or slightly emarginate with median portion thickened and more or less inflexed; notaulices weakly to rather strongly defined, terminating posteriorly in a somewhat flattened, rectangular, roughened area on middle of mesoscutum before scutellum; mesopleura usually roughened and punctate, more rarely largely smooth; scutellum narrow, somewhat conically elevated; post-scutellum small, but strongly elevated; propodeum more or less coarsely, irregularly rugulose, median longitudinal carinae diverging posteriorly, lateral longitudinal carinae more or less distinct; areolet absent; first three tergites with granular or rugose sculpture; first tergite often rathercoarsely, ir-

*Contribution from the Division of Entomology (Systematic Entomology), Department of Agriculture, Ottawa.

regularly rugulose, and usually with a median pair of longitudinal carinae except at apex; second tergite usually less coarsely sculptured than first and with a pair of more or less conspicuous *variolae;* third tergite finely sculptured, sometimes only at base; second and third tergites firmly united, the suture fused though sometimes marked by a transverse impression; apex of abdomen more or less compressed, sheath not or only very slightly exceeding apex of abdomen.

Two North American species have been described in *Syndipnus,* namely *S. longipes* Davis (4) and *S. erythrogaster* Vier. (5). According to observations on the type of *longipes,* made for me by Mr. W. J. Brown, this species has a normal suture separating the second and third abdominal tergites. I am unable to place *longipes* in its proper genus (probably it is Euryproctine) but would here exclude it from *Syndipnus.* Viereck's description of *erythrogaster* leaves me in some doubt as to the generic position of that species. His statement "clypeus not separated from face" if literally true would distinguish the species from any *Syndipnus* known to me. He also writes "abdomen mostly smooth and polished" which condition is at variance with *Syndipnus* in which the first two or three tergites are rather characteristically sculptured. Mr. Cushman informs me that Mr. A. B. Gahan examined the type of *erythrogaster* in 1917 and reported the abdomen missing. Gahan noted that the type traced to *Syndipnus* in Ashmead's key, and he also made a few notes on its structure, which while not in disagreement with *Syndipnus* are insufficient for me to place the species there with any certainty. It is therefore not included in the present synopsis.

My examination of the type of (*Tryphon*) *Polyblastus gaspesianus* Prov., in the Quebec Museum has demonstrated that this species is a *Syndipnus.* It is well known that many species of Tryphoninae are as yet not properly placed generically but I do not know of any others which at the present time should be referred to this genus.

KEY TO SPECIES

1. Abdomen above varying in color from almost entirely reddish to bicolored reddish and black, but always with at least the median tergites conspicuously marked with reddish 2
   Abdomen black above, sometimes with the third and following tergites narrowly paler at apices and on their lateral margins 5
2. Stout bodied species; first abdominal tergite only about one third longer than broad at apex (fig. 5) and very coarsely, irregularly sculptured ..... *rubiginosus* n. sp.
   Rather slender species; first abdominal tergite at least nearly twice as long as broad at apex (figs. 6, 7) and only moderately sculptured 3
3. Mesopleura without a distinct unsculptured area anterior to speculum; coxae and basal segments of trochanters black; thorax without yellow spot before tegula; face black in both sexes ..... *alaskensis* n. sp.
   Mesopleura with a rather distinct unsculptured area anterior to speculum; front and middle coxae and basal segments of trochanters more or less reddish or yellowish; thorax with a small yellow spot before tegula; face yellow except in female of *lateralis* (male *pannicularius* unknown) 4
4. First abdominal tergite with a pair of median dorsal carinae except at apex; face in female entirely black ..... *lateralis* (Grav.)
   First abdominal tergite without dorsal carinae; face in female largely yellow ..... *pannicularius* (Holmg.)
5. Coxae black; third and following tergites with their posterior margins distinctly but narrowly sordid yellowish-brown ..... *ungavae* n. sp.
   Coxae reddish; only the extreme apices of the fourth and following tergites inconspicuously whitish 6

6. Temples strongly rounded and not receding for some distance behind eyes; orbit without a whitish spot at upper extremity of eye; only a small whitish spot before tegula; face and malar space black in both sexes. ..... *gaspesianus* (Prov.)

Temples moderately rounded and distinctly receding; orbit with a small whitish spot at upper extremity of eye; upper margin of pronotum with an elongate cream colored stripe before tegula; face and malar space pale creamy yellow in male ..... *probatus* n. sp.

Syndipnus lateralis (Grav.)

(Figs. 1, 6)

Tryphon lateralis Gravenhorst, Ichneum. Eur. I, 690, 1829.

This species, which is known from England and several localities in northern Europe, has not hitherto been recorded from North America. I have examined a male and female of *lateralis* from Europe determined by Pfankuch, and believe them to be conspecific with a series of specimens I have at hand from American localities. The type of *lateralis*, according to Pfankuch (6) has the apex of the first abdominal segment and segments 2-5, reddish, with the sides of the latter marked with blackish. Other specimens noted by Pfankuch lack the lateral blackish markings on the median segments (as is true of the two European examples at hand). Schmiedeknecht (2, p. 2775) also notes some variation in the color of the abdominal tergites. A female from Banff, Alta., in the National Collection, agrees with Pfankuch's description of the type of *lateralis*. Other specimens, from Banff and other American localities, have the second and third tergites entirely reddish, and the tergites beyond varying from almost entirely reddish, with only a small blackish spot on the sides, to largely black with only the median portion reddish. The males usually have the three apical tergites entirely black.

Among the species here treated *lateralis* most closely resembles *pannicularius* with which it agrees in having the nervellus broken at or above the middle. I have followed Schmiedeknecht in regarding these two species as distinct, although the characters by which I have separated them may prove to be unreliable when more specimens are available for study.

The distribution of *lateralis* in North America, as represented by the eight specimens before me, is as follows: Jefferson Highlands, N. Y., June 1895, (H. G. Dyar) ex *Nematus affinis* Marl.; Banff, Alta., June 26, July 1, 1922, (C. B. D. Garrett); Bilby, Alta., June 21, July 1, 30, 1924, (O. Bryant).

In addition to the above specimens of *lateralis* I have seen one male (in poor condition) bearing the data, Colo. 1593, (C. F. Baker), also a female (badly damaged) from Banff, Alta., June 13, 1928, (Owen Bryant) having the nervellus broken distinctly below the middle. In other respects these specimens appear to agree with *lateralis*. Both specimens are in the collections of the United States National Museum. The National Collection possesses a male from Banff, Alta. in which the nervellus is broken distinctly below the middle (approximately at its posterior one-third), and in this specimen, in contra-distinction to the male of *lateralis*, the face is black. Otherwise in structure and color the specimen agrees with *lateralis*. With such scanty material I am unable to evaluate these differences.

A fourth specimen (male) from the collections of the United States National Museum, bearing the data, Colo. 1246, (C. F. Baker) appears to represent an undescribed species. In it the nervellus is inclivous and broken below the middle and the vertex, temples and mesopleura are extensively polished, with the sculptured areas of the latter reduced to a small region adjacent the upper margin at the base of the fore wing, and another close to the lower margin about in a line with the base of the middle coxa. The mesosulcus in this specimen is in the form

of a sharply but shallowly impressed, fine line, rather than being deep and foveolate as in our other species. The color of the body and legs is somewhat as in *lateralis* but the face is black and the second abdominal tergite is black and bears a broad reddish triangle the base of which extends across the apical margin of the tergite.

Syndipnus pannicularius (Holmg.)

(Fig. 7)

Mesoleius pannicularius Holmgren, Svensk. Vet.-Akad. Handl. I, 178, 1855.

My identification of this species is based on a female from Mt. McKinley National Park, Alaska, collected by Mr. F. W. Morand in 1932, now in the collections of the United States National Museum. In this specimen the face is yellow but the black of the front extends downwards onto the face a short distance below the antennal foramina on either side along the orbits; also the second and third abdominal tergities are reddish with the base of the second slightly dusky, and both tergites have a very narrow, dusky line on their lateral margins. The fourth tergite is broadly blackish along its lateral and posterior margins. In other respects the specimen agrees with Holmgren's description of the type from Lapland.

In structure and color this species closely resembles *lateralis* the only noteworthy differences being stated in the key.

Syndipnus alaskensis n. sp.

In Schmiedeknecht's key (2) to the European species traces to *angulatus* Rom., which species, however, from Roman's description is apparently considerably larger (length 7 mm.) with the mesopleura more extensively polished. In *alaskensis* the face is black in both sexes whereas in the male of *lateralis* and the female of *pannicularius* (♂ unknown) it is yellowish. *Alaskensis* also differs from these two species in having the mesopleura more completely sculptured, there being no distinct unsculptured area in front of the speculum. The first abdominal tergite is proportioned as in *lateralis*, and as in that species bears a pair of distinct, median, dorsal carinae. In *alaskensis* all coxae and the basal segments of trochanters are black, whereas in *lateralis* and *pannicularius* the front and middle coxae are more or less reddish or yellowish and the trochanters are entirely yellowish. The last two species also have a small yellow spot before the tegula which is lacking in *alaskensis*.

Female.—Length 5.5 mm. Head as broad as thorax at broadest point; temples rounded, receding at an angle of about 45 degrees; face almost twice as broad as long; clypeus approximately twice as broad as long; malar space four-fifths as long as basal width of mandible; ocellocular line twice as long as diameter of lateral ocellus; head dull, alutaceous.

Mesoscutum rather shining, with numerous, distinct punctures; notaulices distinct, terminating posteriorly in a flattened, rugulose area before scutellum; pronotum, mesopleura and metapleura dullish, all these surfaces except speculum with numerous, very irregular rugulae; propodeum dull, with many rugulae, lateral and median longitudinal carinae rather strong but very irregular; stigma rather broad; nervellus perpendicular, broken slightly below middle.

First abdominal tergite very similar to that of *lateralis*, curved, a little less than twice as long as broad at apex, median carinae distinct on basal two-thirds; second tergite slightly shorter than width at apex; third tergite a little shorter than second; abdomen mostly dull, apical tergites smoother and more shining; first tergite with distinct irregular rugulae; second tergite more finely rugulose, third tergite largely alutaceous; base of fourth tergite feebly alutaceous, mostly smooth beyond.

Head, thorax, propodeum and first abdominal tergite black; flagellum brownish-black; clypeus, mandibles except teeth, tegulae and wing bases yellow;

palpi brown; legs reddish, except coxae and basal segment of trochanters which are black, and tarsi which are somewhat brownish; wings with a slight brownish tinge, veins and stigma brown, the latter sordid yellowish at extreme base; small spot at apex of first abdominal tergite, and the following tergites entirely, reddish; venter of abdomen yellowish, the sternites tinged with brownish on the plica and with large but rather indefinite, lateral, pale brownish patches; sheath dark brown.

Male.—Structure very similar to female. Differs from female in color as follows: the hind tibia have a faint brownish suffusion at base and a more distinct one on apical third; second tergite with a fuscous line between spiracle and base of tergite, as indistinct elongate fuscous spot on the middle of tergite in the basal half, and the variolae somewhat dusky; fourth tergite with basal median portion and apex dull reddish, otherwise black: fifth and following tergite black, the former with its apical margin rufopiceous. In the male paratype the fourth tergite is entirely reddish and the fifth tergite is reddish at the apex with a blackish suffusion occupying the basal two-thirds; also the extreme base of the sixth tergite is reddish; beyond the abdomen is black. In this specimen the hind tibiae are uniformly pale reddish-brown.

Holotype.— ♀, Mt. McKinley National Park, Alaska, 1932, (F. W. Morand).

Allotype.— ♂, same data as holotype.

Paratype.— ♂, Lake Harbour, Baffin Island, Aug. 8, 1935, (W. J. Brown).

Holotype and allotype in collections of United States National Museum. Paratype No. 5046 in Canadian National Collection.

Syndipnus ungavae n. sp.

(Fig. 8)

Traces to couplet 29 in Schmiedeknecht's synopsis (2) of *Syndipnus* and apparently resembles *flaviventris* Rom. but differing from that species in several respects, notably in having the entire clypeus and tegulae pale yellow instead of black, and the second and third sternites of abdomen each with a blackish, sclerotized plate on either side the median fold. Differs from *monticola* Holmg. in having a pair of distinct, median, longitudinal carinae on the first abdominal tergite. In Roman's key (1) to *Syndipnus* traces to couplet 4, differing from *flaviventris* as noted above, and from *maculiventris* in the presence of longitudinal carinae on the first abdominal tergite, also in having the first and second tergites entirely black, with the remaining tergites black except at their apices and on their lateral margins. In *maculiventris* the first tergite at apex, and the entire second and third tergites are reddish.

Female.—Length 6 mm. Head slightly narrower than thorax; temples moderately curved and distinctly receding; eyes parallel within; face almost twice as broad as long; clypeal margin with thickened median portion narrow, the thin lateral angles strongly produced; malar space three-fourths basal width of mandible; ocellocular space slightly more than greatest diameter of lateral ocellus; vertex with a narrow sulcus extending from middle of ocellar triangle to occiput, head finely alutaceous, temples smoother and more shining; face with scattered punctures and a few minute rugulae; clypeus smooth with few punctures; antennae 32 segmented, slender.

Mesoscutum mostly polished, minutely punctate, notaulices rather strongly impressed, extending well beyond middle and terminating in a granular area in front of scutellum, the latter narrow, convex, rather shining and sparsely punctate on disk with apex more densely so, sides rugose; pronotum and mesopleura (except speculum) feebly shining, with numerous, small, irregular, reticulating rugulae; speculum with a small shining area; metapleura and propodeum rather dull, coarsely, irregularly rugose; propodeum with only median longitudinal carina distinct, lateral carinae irregular and confused with rugae, median

carinae diverging posteriorly and connected anteriorly by several transverse rugae; legs slender; hind coxae finely roughened above; arcolet absent, intercubitus very short, only one-fourth as long as abcissa of cubitus, nervulus distinctly postfurcal, second abcissa of discoideus slightly longer than third, nervellus inclivous broken at posterior third.

Abdomen fusiform; first tergite slender at base, sides evenly diverging to apex, apical width approximately two-thirds length, spiracles tuberculate, located slightly before middle, median longitudinal carinae well defined except on apical third of tergite; surface of first tergite somewhat shining, with scattered, irregular rugulae; second tergite two-thirds as long as broad at apex, surface rather evenly, granularly roughened and more or less finely, irregularly rugulose, variolae present but not conspicuous; second and third tergites fused, the latter distinctly shorter than second and more finely granular especially at apex; following tergites more shining and only minutely, reticulately sculptured; sheath short, blunt, apex scarcely attaining tip of abdomen.

Body black, including all coxae and trochanters, except apices of latter; clypeus sordid yellowish; mandibles brownish-black; palpi yellowish at base, brownish beyond; tegulae and a small point before, pale creamy yellow; apical half of trochanters yellowish brown; femora reddish brown with blackish suffusion toward base; tibiae yellowish brown below, darker brownish along their upper surfaces; tarsi, especially posterior pair, rather dark brownish; narrow posterior margins of third and following tergites and broader lateral margins of fourth tergite and beyond sordid yellowish-brown; epipleura of second and third segments and venter sordid yellowish; plica without infuscate areas; second and third sternites each with a large blackish patch on either side; stigma and veins dark brown, former with a small yellowish point at base. The specimen has the appearance of being somewhat cyanide stained.

Holotype.—♀, Port Burwell, (Hudson Strait), Que., July 25, 1935, (W. J. Brown). No. 5047 in Canadian National Collection, Ottawa, Ont.

A single male in the National Collection, from Stupart Bay (Ungava region of Quebec) appears to represent a distinct species. In the above key it traces to *ungavae* (only the hind coxae are black) but it differs from that species in having the mesopleura largely smooth, the abdomen more slender with the first two tergites more finely sculptured and more shining, the face largely yellow, the front and middle coxae yellow except at their bases and the stigma sordid yellowish brown.

Syndipnus rubiginosus n. sp.

(Fig. 5)

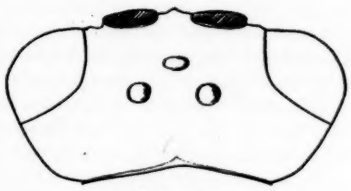
This is a very distinct species having the abdomen, especially the first tergite, much stouter and more coarsely sculptured than in any other species here considered. These characters will at once distinguish it from such species as *lateralis* and *alaskensis* which resemble it more or less in general body color.

In color the present species varies somewhat but always has the abdomen reddish, except the first tergite which is often partly or entirely black. The face is yellow in the male and black in the female.

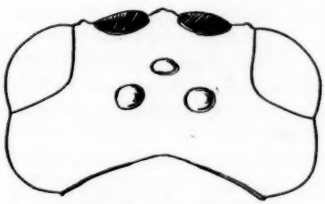
Female.—Length 7.5 mm. Head slightly narrower than thorax, and of the same general form and sculpture as described for *gaspesianus;* antennae 35 segmented, stouter than in *gaspesianus.*

Thorax stout; mesoscutum moderately shining, with numerous, shallow punctures; notaulices distinct, reaching posteriorly as far as the granular-punctate area before scutellum; mesopleura with numerous punctures, those of lower portion more or less confused; speculum polished; scutellum strongly convex and coarsely punctate; metapleura and propodeum coarsely, very irregularly rugose; propodeum with a short, basal, horizontal portion and a large, strongly declivous. posterior surface; basal portion with a pair of short, parallel, longi-

PLATE IX.



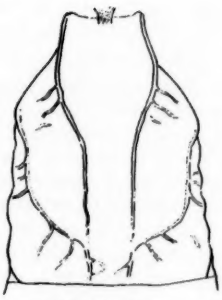
1. lateralis



2. gaspesianus

4. gaspesianus

3. probatus



5. rubiginosus

6. lateralis

7. pannicularius

8 unpavae

SPECIES OF SYNDIPNUS

tudinal carinae which diverge rather suddenly on the declivous surface to form a broad petiolarea; areola not well delimited; lateral, longitudinal, propodeal carinae strong and rather irregular; legs rather stout; hind coxae coarsely granular-punctate on upper, outer face; nervellus slightly reclivous, broken distinctly below middle.

Abdomen stout, fourth and following segments more or less compressed; first segment sub-petiolate, short, only about one-third longer than broad at apex, sides except near base only slightly diverging; first tergite rather strongly convex, spiracles situated slightly before middle of tergite and immediately below a short carinate elevation, median carinae widely separated at base, irregular, becoming parallel and strongly elevated on middle of tergite, finally becoming obsolete before apex of tergite, surface of tergite with a network of coarse, very irregular rugae, posterior lateral angles depressed and coarsely rugose; second tergite distinctly broader than long and slightly longer than third, separated from first tergite by a broad, strongly impressed, transverse furrow, variolae large but not well defined, transverse sub-apical impression very shallow and broad, surface of tergite dullish, granular, with traces of fine rugulae especially toward base, at middle of base with a pair of poorly defined, short, median, parallel carinae; third tergite fully as broad as second, finely granular, following tergites less distinctly sculptured and more shining; hypopygium laterally compressed, posterior margin truncate; sheath broad, short, scarcely attaining apex of abdomen.

Head, thorax, propodeum, coxae and basal trochanters black; anteannae blackish, paler below and becoming sordid yellowish-brown at apices; clypeus yellowish-stramineous, mandibles and palpi stramineous, the former with a large blackish suffusion at base; tegulae very dark brown, wing bases sordid yellowish with a brown streak on margin; legs rather dull reddish-brown, all tarsi paler; hind tibia, especially apically, suffused with brownish; stigma and veins brown, the former with a small paler spot at base, membrane tinged with brownish; abdomen reddish, paler and more yellowish-brown on venter, first tergite with a blackish suffusion at middle on either side.

Male.—Structure resembling female; differing in color from the female as follows: face, malar space, mandibles except apices, spot on scape below and small dot before tegula, yellow; four anterior coxae brownish apically; hind tarsi reddish-brown; first tergite black with apex narrowly reddish.

Holotype.—♀, Kelly's Camp, Cascapedia River, Gaspé Co., Que., June 29, 1934, (M. L. Prebble).

Allotype.—♂, York Co., N. B. (reared in laboratory, Sept. 7, 1938). Collected by Forest Insect Survey, Division of Entomology.

Paratypes.—♂, ♀, Kelly's Camp, July 7, 1935 (♂), June 25, 1935 (♀), (M. L. Prebble); ♂, Wright, Que., May 26, 1933, (G. S. Walley); ♂, Sutherland, Sask., June 14, 1928, (K. Stewart); ♀, No. 27 (no locality data) ex Harrington Coll.

Holotype, allotype and paratypes, No. 5048 in Canadian National Collection. Paratype in collections of United States National Museum.

Hosts.—The specimens from Kelly's Camp, Que., were reared from *Pikonema dimmockii* (Cress.); and the allotype and male paratype from Sutherland, Sask., from *Pikonema alaskensis* (Rohwer).

Remarks.—The following variations in structure and color have been noted in this species. The female paratype from Kelly's Camp is very similar to the holotype but has the carinae defining the areola and petiolarea more strongly elevated and more regular. The same is true of the male paratype from Kelly's Camp. This latter departs from the description of the allotype in having the yellow color of the malar space extending a short distance on to the genae; also

in this specimen the tegulae and front and middle coxae and trochanters are yellow, the hind tarsi are stramineous and the first tergite is reddish. The male paratype from Wright, Que., has the body more highly ornamented with yellow than the male from Kelly's Camp, having in addition to the markings noted for that specimen, a yellow stripe along the upper margin of the pronotum before the tegula, a yellow spot below the tegula, the lower angle of the pronotum and a more or less continuous line along the prepectoral carina yellow. In this specimen the first tergite is blackish except at the apex and between the carinae. The female without locality data has a small yellow spot on the face joined to the clypeus.

Mention might be made here of a single male from Bar Harbor, Maine, in the collections of the United States National Museum. This specimen may represent a distinct species allied to *rubiginosus*. It has somewhat the body form of *rubiginosus* but the first tergite is more elongate and less strongly convex, the mesopleura are more strongly sculptured; also the face and thorax, except the tegulae, are entirely black.

Syndipnus gaspesianus (Prov.) new combination
(Figs. 2, 4)

Tryphon gaspesianus Provancher, Nat. Canad. XI, 242, 1879.
Polyblastus gaspesianus (Provancher), Add. Faun. Can. Hym., 107, 1886.

In this species and the following the abdomen is black above except for the very narrow margins of the apical tergites, thus differing markedly from all the preceding species except *ungavae*, from which latter both *gaspesianus* and *probatus* differ in their entirely reddish and yellowish coxae, the coxae in *ungavae* being uniformly black.

The principal differences between *gaspesianus* and *probatus* are noted in the discussion under *probatus*. As *gaspesianus* has hitherto been only briefly described the following rather complete description is included, based on a series of specimens in the National Collection.

Female.—Length 8 mm. Head slightly broader than remainder of body; temples broad, strongly rounded; eyes parallel within; face twice as broad as long; clypeus about twice as broad as long, moderately convex, free margin narrowed at sides with median two-thirds truncate, the latter thick in middle region, the remainder of margin narrowly, sharply impressed; malar space scarcely one-half basal width of mandible; ocellocular space one and one-half times diameter of lateral ocellus; head feebly shining, minutely sculptured especially on face and frons, vertex and temples more shining, clypeus polished; antennae 37 segmented, slender, first flagellar segment almost one-third longer than second, succeeding segments very gradually decreasing in length.

Thorax shining; mesosutum with numerous shallow punctures; notaulices only distinct anteriorly; mesopleura more densely punctate and somewhat roughened in lower posterior region; speculum polished; scutellum strongly convex, punctate, shining; metapleura and propodeum less strongly shining than region before, rather coarsely, irregularly rugose; longitudinal carinae of propodeum distinct, slightly irregular, the median pair gradually diverging posteriorly and joined by several transverse ridges with a more or less defined areola; legs rather slender, claws without teeth, hind coxae finely granularly roughened; wing without areolet; intercubitus a little more than one-half as long abcissa of cubitus; discocubitus strongly curved before middle; nervulus slightly postfurcal; second and third abcissae of discoideus equal; nervellus reclivous, emitting discoidella at middle or slightly above.

Abdomen rather slender, tapering at base and apex, the fourth segment moderately, and the following more strongly compressed; first tergite slender at base, evenly broadening from immediately beyond the base to apex, where it is nearly two-thirds as broad as length of tergite, spiracles located a little before

middle on irregular, tubercle-like elevations, median carinae parallel, strongly elevated except at extreme apex of tergite, regions between and on either side carinae concave and irregularly, rather coarsely rugose; second tergite almost quadrate, slightly longer than third with which it is fused; surface of second tergite uneven toward base rather coarsely, irregularly rugose, with a pair of short, median, longitudinal carinae, the region on either side depressed, slightly beyond middle on either side with a low, rounded prominence (variola), beyond which the tergite bears a broad, shallow, transverse impression, the entire tergite beyond the base with fine, granular sculpture; third and following tergites with similar but increasingly fine sculpture and becoming more shining; hypopygium compressed, posterior margin truncate; sheath broad, short, extending very slightly beyond tip of abdomen.

Black except as follows: clypeus sordid yellowish-white; mandibles, except tips, whitish; palpi pale stramineous; tegulae, extreme base of wing and small spots before and below tegula, white; veins and stigma dark brown, membrane slightly dusky; legs reddish, apex of hind femur, entire hind tibia and tarsus black; lateral margins of fourth and following abdominal tergites, and very narrow posterior margin of seventh tergite, whitish; venter of abdomen creamy white, first sternite with a median, and the three following sternites each with three large blackish areas; hypopygium and sheath whitish, the latter stained with brownish.

Male.—Very similar to female; differs in color in having the abdominal tergites entirely black and the hind tibia with an obscure brownish annulus before the base.

Host.—Pikonema alaskensis (Rohwer).

Distribution.—Type locality, Douglastown, Gaspé Co., Que. The National Collection contains six specimens (4 ♂, 2 ♀) from Kelly's Camp, Cascapedia River, Gaspé Co., reared from *Pikonema alaskensis* (Rohwer), and a single female collected at Gracefield (Wright Co.), Que.

Syndipnus probatus n. sp.
(Fig. 3)

Resembles *gaspesianus* in general structure and color but differing from that species in its smaller sizes, less strongly rounded, distinctly receding temples, and also in having the nervellus broken distinctly below the middle. Differs in color from all other species discussed in this paper in having a small whitish dot at the upper extremity of the eye and an elongate ivory stripe on the upper margin of the pronotum. The male of *probatus* differs from that of *gaspesianus* in having the face and malar space pale creamy yellow.

Female.—Length 5 mm. Agreeing with the foregoing description of *gaspesianus* except in the respects mentioned above and as follows. Head broader through eyes than through the temples; malar space two-thirds basal width of mandible; ocellocular space one and one-third times diameter of lateral ocellus; antennae 29-segmented.

Mesoscutum with rather large distinct punctures; notaulices well defined and finely foveolate anteriorly; mesopleura smooth and shining with numerous punctures; hind coxae almost smooth; discocubitus rather abruptly bent before middle; nervulus not distinctly post-furcal; second abcissa of discoideus a little longer than third; nervellus inclivous, emitting discoidella at posterior third.

First abdominal tergite more evenly convex than in *gaspesianus*, with median carinae distinct but less strongly elevated and the adjoining regions not so strongly concave, tergite at apex fully two-thirds as broad as long; second tergite almost three-fourths as long as broad at apex and slightly longer than third tergite; second tergite sculptured as in *gaspesianus* but with surface less uneven without the median carinae visible at base and without a distinct transverse subapical impression.

Color very similar to *gaspesianus;* mesopleura however without a small pale spot below tegula and pronotum with a cream colored stripe in place of the usual spot before tegula extending along the upper margin; legs resembling *gaspesianus* but hind femora not blackish at apex, hind tibia reddish with the base narrowly faintly brownish and the apical half and the hind tarsi except at extreme base of latter brown; middle tarsi mostly pale brown; abdominal tergites dark rufo-piceous, (possibly somewhat faded) the first tergite almost pure black except at apex; apical margins of last three tergites with a fine pale line and the lateral margins of the fourth and following tergites sordid whitish; sternum pale yellowish-white each sternite with a pair of large quadrangular brownish plates, plica immaculate; sheath brown.

Male.—Agrees in structure with the female. Color as in female except that the face and malar space pale creamy yellow.

Holotype.— ♀ , Plattsburg, N. Y., June 1894, (H. G. Dyar) ex *Nematus dorsivittatus;* SF3H. In United States National Museum.

Allotype.— ♂ , same data as holotype.

Paratype.— ♂ , same data as holotype.

The above three specimens are all mounted on the same pin, the holotype being the uppermost and the allotype the lowermost. The paratype is the middle specimen and is glued to a small card.

A single female specimen, in the United States National Museum, bearing the data "Redlands, Calif., (F. R. Cole)" agrees with the above species so remarkably well that I am inclined to consider it the same species despite the wide difference in locality. This specimen differs in structure from the type of *probatus* only in being slightly larger (length 6 mm.) with the abdomen a little more slender and the antennae 30 segmented. In color the abdomen is pure black with the narrow apical margins of the last three tergites more conspicuous than in the type; also the darker portions of the hind tibia and tarsi are brownish-black.

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TWO APPARENTLY UNDESCRIBED SPECIES OF GEOMETRIDAE FROM THE SOUTHWEST

BY JOHN L. SPERRY
Riverside, California

Dasycosymbia boweri n. sp.

Head, legs, antennae and ground color of wings ochreous tan in male, straw color in female. Front and palpi in both sexes reddish. The fore wings subfalcate in the male, falcate in the female. T. a. line very faint, narrow, often obsolete at costa, starts one-fifth out from the base on the costa, runs outwardly oblique to the cell, thence curving usually evenly, sometimes slightly wavy subparallel to the outer margin, reaching inner margin about one-fifth out. Median line starts from costa two-thirds out, runs towards center of inner margin to subcostal vein, thence curves outward around discal dot to vein 4, thence inward in an even curve to a point below and just outside the discal dot at vein 2, thence parallel to the t. a. line reaching the inner margin at about one-half out. T. p. line starts at costa about 2 mm. outside the median line or four-fifths out on costa, runs nearly parallel to median line except that t. p. line is

more regular and does not curve as sharply inward between veins 2 and 4; the line is scalloped and sometimes broken. The area between the median and t. p. lines is the lightest part of the wing in both sexes. There are traces of a broken dark ochreous shade just outside the t. p. line, especially in the female, most evident near the costa, opposite the cell, and near the inner margin. The area between the base and median line is the darkest part of the wing, the terminal area being lighter than the basal but not as light as the area between the median and t. p. lines. Discal spot an elongate ringlet, fuscous with light center. Fringe concolorous with terminal area. One female specimen has a broken, narrow dark line at the base. The color of the several areas on the primaries is continued on the secondaries, t. a. line absent, median from just inside the continuation of the same line of the primaries, curves outward and inward again around discal spot to vein 1, thence straight to inner margin at just over one-half out; t. p. line from just inside continuation of t. p. line of the primaries, broken, subparallel to median line, the space between median and t. p. lines somewhat broader than on the primaries. Discal dot as on primaries but less elongated. Fringe as on primaries.

Underside of male yellowish-tan with a sprinkling of minute reddish scales, lines of the upper side showing dimly through as also the discal dots; in female underside straw with a fine sprinkling of reddish scales, lines and dots of upper side very faint. Expanse, male 26 mm., female 26-30 mm.

Holotype.—Male, Baboquivari Mts., Arizona, April 23, 1938, Grace H. & John L. Sperry, collectors. No. 5084 in the Canadian National Collection at Ottawa. The holotype lacks eyes.

Allotype.—Female, April 27, 1938, same locality and collectors, in the Sperry collection at Riverside, California.

Paratypes.—1 male, 3 females, Baboquivari Mts., Arizona, April 25-27, 1938, Dr. John A. Comstock and Grace H. & John L. Sperry, collectors, and Madiera Canyon, Santa Rita Mts. Arizona, June 3, 1935, G. H. & J. L. Sperry, collectors, in the Los Angeles Museum and in the Sperry and Bower collections.

This species is close to *gracilata* Grossbeck, although somewhat larger and considerably lighter in color, and the lines are not evenly spaced as in *gracilata*. The discal spots in *boweri* are ringlets distinct and comparatively large. Grossbeck also remarks that *gracilata* has the mottled appearance of *Leptomeris plantagenaria*, a feature wanting in *boweri*, and the color of *Cosymbia myrtaria* Gn., much too dark for this species.

It gives me great pleasure to name this interesting species in honor of my friend Mr. Harold M. Bower of Wausau, Wisconsin, in memory of many pleasant days together in the field and in the hospitality of his home, and with the hope that some of his excellent entomological work, which it has been my privilege to see, may soon be published.

Ixala klotsi n. sp.

Male: Head, thorax, antennae and palpi dark fuscous brown; abdomen gray-white flecked above with gray-brown scales; a line of lighter scales below and between the antennae on the head. Palpi moderately short in male, very short in female, rough scaled, front smooth in male, rough scaled in female. Legs dark tan. Ground color of wings light cream, heavily sprinkled with brown and black scales. T. a. line black, narrow, distinct, starts at about one-third out from base on costa at right angles for 1 mm., thence angles inward and straight to inner margin at about one-fifth out. An indistinct median shade parallel to the t. p. line and passing through the discal dot reaches the inner margin nearly one-half out. The t. p. line black, narrow, distinct, starts about

three-fourths out on costa, running slightly sinuate, subparallel to the outer margin, reaches inner margin about two-thirds out. An indistinct brownish shade outside the t. p. line starting about 1 mm. in from the apex, crosses the wing, gradually approaching the t. p. line until it almost touches about 1 mm. from inner margin and disappears. Another short brownish line from the apex joins the last mentioned shade near vein 5. Discal dot distinct, black, linear; fringe concolorous with the wing, an indistinct dark line at the base.

Secondaries lighter than primaries, an indistinct light brown shade starting near center of inner margin and disappearing beyond middle of wing takes the place of t. a. line; t. p. line very narrow, black, distinct, starts about three-fourths out on inner margin, runs straight toward costa just outside t. p. of fore wing and disappears before reaching the costa, outside this line is a distinct brownish band nearly parallel with outer margin, narrowest at inner margin, faint at costa. No discal dot apparent, fringe as in primaries.

Beneath light gray sparingly sprinkled with tiny brown scales. Discal dots present on all wings, on primaries distinct, on secondaries very faint. Fringes as on upper side.

Female: Darker and browner than male, abdomen darker dorsally, lines more distinct, shades, although diffuse, better developed. Dark line at base of fringe well defined, black. Expanse; male 27 mm., female 30 mm.

Holotype.—Male, Baboquivari Mts., Arizona, April 24, 1938, Grace H. & John L. Sperry, collectors. No. 5085 in the Canadian National Collection at Ottawa.

Allotype.—Female, April 24, 1938, same locality and collectors, in the Sperry collection at Riverside, California.

Paratypes.—One male, one female, April 24 and 28th, 1938, same locality and collectors, in the Sperry Collection.

This species is considerably smaller and less gaily colored than *adventaria* Pearsall which expands 37-38 mm. as compared to 27-30 mm. for *klotsi*. It is smaller than *desperata* Hulst and lacks the basal and submarginal lines of *desperata*. It is closer in size to *proutearia* Cass. but lacks the basal line; the t. a. line in *klotsi* is straight, lacking the bows of this line seen in *proutearia* and also the large bows of the t. p. line. The wings also lack the reddish tinge of *proutearia*.

It gives me great pleasure to name this fine species in honor of Dr. Alexander B. Klots of the College of the City of New York whose painstaking work is dissipating some of our worst problems and whose love of the mountains and wilderness byways makes us very close akin.

A NEW NOCTUID FROM THE DESERT REGION OF SOUTHERN CALIFORNIA

BY GRACE H. SPERRY
Riverside, California

Chlorocleptria jaegeri sp. n.

Male: Palpi dirty cream color; head and thorax clothed with smooth hair, cream white; abdomen cream white; legs cream white; fore tibia bears two long claws and one or two shorter spines on inside, three short claws and a spine on outside. Primaries cream white, lightly dusted with brownish-olivaceous scales beyond t. a. line, more heavily so in subterminal area; t. a. line very faint at best, visible only in occasional specimens, cream white shaded brownish-olivaceous without, starting on costa, and barely indicated, from point about one-third from base, outwardly oblique to cell, thence back at acute angle, slightly curving to inner margin about two-fifths from base, being more definite

below cell; p. t. line faint but definite, brownish-olivaceous within, cream white without, starting on costa about three-fourths from base, slightly excurved at start, running parallel with outer margin to vein 7, thence gently incurved with slight sinuation near vein 3, to inner margin at about three-fourths from base; subterminal area uniformly darker with brownish-olivaceous dusting; terminal line very faint, brownish-olivaceous within, cream white without; fringes concolourous with subterminal area. Secondaries uniformly shining cream white, veins showing a little darker, fringes concolorous. Beneath, both wings shining cream white, central area faintly suffused with darker shade, fringes concolorous. Expanse 28-32 mm.

Female: Same color and markings. Expanse 27–33 mm.

In both sexes there is a variation in the number of brownish-olivaceous scales dusting the primaries, the latter being in some individuals distinctly whitish.

Holotype– ♂, March 25, 1940, Split Mountain Canyon, San Diego County, Cal., Grace H. and John L. Sperry collectors, no. 5114 in the Canadian National Collection, Ottawa.

Allotype– ♀, April 12, 1939, Split Mountain Canyon, San Diego County, Cal., same collectors, in Canadian National Collection, Ottawa.

Paratypes–10 ♂, 11 ♀, April 12, 1939 and March 25, 1940, same locality and collectors, distributed as follows: 1 ♂, 1 ♀, U. S. National Museum, Washington, D. C.; 1 ♂, 1 ♀, Los Angeles Museum, Los Angeles, Cal.; 1 ♂, 1 ♀, Collection of Mr. R. R. McElvare, Port Washington, N. Y.; remainder in the Sperry Collection, Riverside, Cal.

I am indebted to Dr. J. McDunnough* for the generic reference; *jaegeri* seems allied to the genotype, *C. simplex* Smith, which also has a small corneous plate below the front. The species differs from *C. felicitata imperialis* B. & McD. in being lighter in color, the female being without the pink suffusion of *imperialis*. The habitat of *jaegeri* is the mountainous border of Imperial Valley, Cal.

This moth is found resting in the blossoms of *Aster orcuttii* Vasey & Rose, a rare aster of the southern Colorado Desert of California, just as *ligeae* Smith of the allied genus *Thyreion* rests in the flowers of the Mohave Desert aster, *A. tortifolius* Gray.

I take pleasure in naming this desert species for Mr. Edmund C. Jaeger, of the faculty of Riverside Junior College, Riverside, Cal., whose intimate knowledge of the California deserts and their flora is continually giving pleasure to his friends.

*According to Hampson's keys, the species would fall in the genus *Oxylus* Grt. but, irrespective of the spining, it would seem to show more general affinity to species included in *Chlorocleptria*. J. McD.

GUELPH PRINTING SERVICE

Mailed Wednesday, July 31st, 1940.

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